WHAT IS CLAIMED IS:

1   1.   A method for extracting demographic information, comprising:

2   initiating a dialog between a contact and a call handling system;

3   selecting a set of demographic characteristics;

4   assigning a set of acoustic confidence scores to the demographic

5   characteristics;

6   assigning a set of substantive confidence scores to the demographic

7   characteristics;

8   combining the acoustic and substantive confidence scores for each of the

9   demographic characteristics; and

10   tailoring information presented to the contact using the set of combined

11   confidence scores.

1   2.   The method of claim 1, wherein assigning substantive confidence scores

2   includes:

3   presenting the contact with a first substantive dialog;

4   collecting a set of responses to the first substantive dialog from the contact;

5   comparing the contact's responses to a predefined body of responses

6   associated with the set of demographic characteristics; and

7   assigning a first set of substantive confidence scores to the demographic

8   characteristics.

1   3.   The method of claim 2, wherein presenting includes:

2   continuing to present the contact with the substantive dialog until one of the

3   substantive dialog confidence score reaches a predetermined value.

1   4.   The method of claim 2, wherein presenting includes:

2   continuing to present the contact with the substantive dialog until a

3   predetermined time period has expired.

1   5.   The method of claim 2, wherein presenting includes:

2   presenting the substantive dialog to the contact when the contact is placed on

3   hold.

1   6.   The method of claim 2, wherein assigning substantive confidence scores

2   includes:

3   presenting the contact with a second substantive dialog, in response to a

4   request from the call handling system;

5   collecting a set of responses to the second substantive dialog from the contact;

6   comparing the contact's responses to the predefined body of responses

7   associated with the set of demographic characteristics; and

8   assigning a second set of substantive confidence scores to the demographic

9   characteristics.

1   7.   The method of claim 1, wherein assigning substantive confidence scores

2   includes:

3   presenting the contact with a probing dialog;

4   collecting a set of responses to the probing dialog from the contact;

5   comparing the contact's responses to a predefined body of probing dialog

6   responses associated with the set of demographic characteristics; and

7   assigning a set of probing dialog confidence scores to the demographic

8   characteristics.

1   8.   The method of claim 7, wherein presenting includes:

2   asking the contact a set of questions associated with the demographic

3 characteristics.

1   9.   The method of claim 1, wherein assigning substantive confidence scores

2 includes:

3   presenting the contact with a set of multiple choice questions;

4   collecting a set of responses to the multiple choice questions from the contact;

5   comparing the contact's responses to a predefined body of multiple choice

6 question responses associated with the set of demographic characteristics; and

7   assigning a set of multiple choice confidence scores to the demographic

8 characteristics.

1   10.   The method of claim 9, wherein presenting includes:

2   presenting the contact with multiple choice questions associated with the

3 demographic characteristics.

1   11.   The method of claim 1, wherein assigning acoustic confidence scores includes:

2   extracting an acoustic feature from the contact's speech signal; and

3   comparing the feature to a predefined body of speech signal features associated

4 with the set of demographic characteristics.

1   12.   The method of claim 1, wherein combining includes:

2   weighting the confidence scores using ground truth data.

1   13.   The method of claim 1, wherein weighting includes:

2   adjusting a first confidence scores weight for a given demographic

3   characteristic if the first confidence score differs from a second confidence score for

4   that given demographic characteristic by a predetermined amount.

1   14.   The method of claim 1, wherein combining includes:

2   multiplying together the confidence scores for each demographic

3   characteristic.

1   15.   The method of claim 1, wherein combining includes:

2   combining the confidence scores for each demographic characteristic

3   according to the following formula:

4         $S(C_i) = \sum_{j=1}^{N} r_j p_{ij}$ (where N is a total number of classifiers, Ci is the i'th

5   demographic characteristic, and Pij is a confidence score for Ci generated by

6   Classifier j, and r_j is trained weights);

1   16.   The method of claim 1, wherein combining includes:

2   combining the confidence scores from each classifier for each demographic

3   characteristic according to the following formula:

4         $S(C_i) = \prod_{j=1}^{N} p_{ij}^{r_j}$ (where N is a total number of classifiers, Ci is the i'th

5   demographic characteristic, and Pij is a confidence score for Ci generated by

6   Classifier j, and r_j is trained weights);

1   17.   The method of claim 1, wherein combining includes:

2   using a neural net to combine the confidence scores for each demographic

3   characteristic.

1   18.   The method of claim 17, wherein the neural net is a Multiple Layer Perception

2   (MLP) network.

1   19.   The method of claim 1, wherein tailoring includes:

2   identifying a sub-set of the demographic characteristics having combined

3   confidence scores exceeding a predetermined set of thresholds; and

4   presenting the contact with information specifically directed to contacts having

5   the sub-set of demographic characteristics.

1   20.   The method of claim 19, wherein the predetermined threshold is equal to a

2   highest combined confidence score.

1   21.   The method of claim 1, wherein the demographic characteristics include

2   gender, age, accent, and stress level.

1   22.   A method for extracting demographic information, comprising:

2   initiating a dialog between a contact and a call handling system;

3   selecting a set of demographic characteristics;

4   assigning a set of acoustic confidence scores to the demographic

5   characteristics;

6   assigning a set of substantive confidence scores to the demographic

7   characteristics;

8   combining the acoustic and substantive confidence scores for each of the

9   demographic characteristics;

10   tailoring information presented to the contact using the set of combined

11 confidence scores;

12   presenting the contact with a probing dialog;

13   collecting a set of responses to the probing dialog from the contact;

14   comparing the contact's responses to a predefined body of probing dialog

15 responses associated with the set of demographic characteristics;

16   assigning a set of probing dialog confidence scores to the demographic

17 characteristics;

18   presenting the contact with a set of multiple choice questions;

19   collecting a set of responses to the multiple choice questions from the contact;

20   comparing the contact's responses to a predefined body of multiple choice

21 question responses associated with the set of demographic characteristics; and

22   assigning a set of multiple choice confidence scores to the demographic

23 characteristics.

1   23.   A computer-usable medium embodying computer program code for

2 commanding a computer to extract demographic information, comprising:

3   initiating a dialog between a contact and a call handling system;

4   selecting a set of demographic characteristics;

5   assigning a set of acoustic confidence scores to the demographic

6 characteristics;

7   assigning a set of substantive confidence scores to the demographic

8 characteristics;

9   combining the acoustic and substantive confidence scores for each of the

10   demographic characteristics; and

11   tailoring information presented to the contact using the set of combined

12   confidence scores.

1   24.   A system for extracting demographic information, comprising a:

2   means for initiating a dialog between a contact and a call handling system;

3   means for selecting a set of demographic characteristics;

4   means for assigning a set of acoustic confidence scores to the demographic

5   characteristics;

6   means for assigning a set of substantive confidence scores to the demographic

7   characteristics;

8   means for combining the acoustic and substantive confidence scores for each

9   of the demographic characteristics; and

10   means for tailoring information presented to the contact using the set of

11   combined confidence scores.

1   25.   A system for extracting demographic information, comprising:

2   an Interactive Voice Response module for initiating a dialog between a contact

3   and a call handling system, and selecting a set of demographic characteristics;

4   an acoustic classifier for assigning a set of acoustic confidence scores to the

5   demographic characteristics;

6   a substantive classifier for assigning a set of substantive confidence scores to

7   the demographic characteristics; and

8   a data combiner for combining the acoustic and substantive confidence scores

9   for each of the demographic characteristics; and

10   wherein the Interactive Voice Response module further tailors information

11   presented to the contact using the set of combined confidence scores.

1   26.   The system of claim 25, wherein the substantive classifier includes:

2   a probing dialog classifier for assigning a set of probing dialog confidence

3   scores to the demographic characteristics; and

4   a multiple choice classifier for assigning a set of multiple choice confidence

5   scores to the demographic characteristics.

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